

OPPT-2002-0060-0026

STRUCTURE ACTIVITY TEAM REPORT

ver. 04/98

CBI? (YES/NO)

Case #: P-99-0510

DCN:

SAT Date: 3/5/99

SAT Chair:

V. Nabholz

Submitter:

Chemical Name:

REC'D
3/11/99 15
AM 8:31

RECEIVED

CAS RN:

Trade Name:

UVINUL 4040 P



50990003454/1

Molecular Wt.	481	WT%<500:	WT%<1000:
IP:	150.40	BP:	>500 Eq. Wt:
I ₂ O Sol (g/L):	0.3300	V.P.	7.5E-9
Max. Prod. Volume (kg/yr):		Physical State:	Solid (orange powder)
ISE:			

olymerization inhibitor for distillation of styrene. STN file CA: 8 references found; 129:41523, 129:82074, 128:230819, 128:61912, 128:61909, 128:61899
27:248896, 125:275667

Related Case Numbers	Case Role	Related Case Numbers	Case Role

Focus Date: Mar 15 1999

Results:

5ECATE6ORY - Ecotox/Health/Fate
testing

STRUCTURE ACTIVITY TEAM REPORT 05 March 1999

CBI

CASE NUMBER: P99-0510

RELATED CASES:

CONCLUSIONS/DISCUSSIONS

TYPE OF CONCERN:	<u>HEALTH</u>	<u>ECOTOX</u>
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LEVEL:	1-2	2
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KEYWORDS: AQUATOX (A,C), LIVER, BLOOD, IMMUNO

SUMMARY OF ASSESSMENT:

FATE: MW481;
solid with mp = 150 °C (M);
 $\log K_{ow} = 0.26$ for the parent: 1.51 (HPLC), 2.2 (SRC);
 $S > 40$ g/L @ 20 °C (PMN), 180 mg/L (EAB);
vp = 7.5E-9 mm Hg or torr @ 25 °C (ICB);
bp >500 °C (P);
 $H < 1.0E-8$ (P);
 $\log K_{oc} = 5.5$ (P);
 \log fish BCF = 0.46 (P);
POTW removal = 0 to 90% via sorption and possible partial biodegradation;
submitted test data for aerobic biodegradation were:
0 to 20% biodegradation in 28 d, thus not readily biodegradable;
time for complete ultimate aerobic biodegradation \geq months;
sorption to soils and sediments = very strong;
PBT Potential: P1B1T1
*CEB FATE: migration to ground water = negligible;

HEALTH: Absorption as a neat solid nil thru skin based on physical/chemical properties, but poor in when in solution based on physical/chemical properties; good thru lungs based on physical/chemical properties; and poor thru GI tract based on analogs;

submitted test data with this PMN were
rat acute oral LD₀ = 25.0 g/kg with no significant toxic signs;
rat acute dermal LD₀ = 2.0 g/kg with no significant toxic signs;
mild and transient (2 d) skin irritation in rabbits;
mild and transient (3 d) eye irritation in rabbits;
Ames test was negative;
E. coli test was negative;
chromosome aberration test with CHV79 cells was negative;
no skin sensitization in guinea pigs (M&K);
rat 28-d subchronic oral-gavage NOAEL = 25 mg/kg/d and LOEL = 200 mg/kg/d with effects to liver, blood, specifically, hemolytic

effects, and potential immunotoxicity based on white blood cell counts;

concern for liver toxicity, effects to blood, and possible immunotoxicity based on submitted test data;

low to moderate concern.

*CEB HEALTH: Exposures to humans: inhalation, dermal, ingestion, and drinking water;

ECOTOX: Predicted (P) and measured (M) toxicity values in mg/L (ppm) are:

fish 96-h LC50	<= 1700.0	P
fish (ZF) 96-h LC50	= 190.0	M S,M
daphnid 48-h LC50	<= 100.0	P
daphnid 48-h LC50	= 8.2	M S,M
green algal 96-h EC50	<= 100.0	P
algal 72-h EC50-biom	> 30.0	M S,M
P. putida 16-h EC50	> 7600.0	M S,N
ss bacteria 3-h EC50	> 700.0	M S,N
fish chronic value	<= 100.0	P
fish ChV	= 20.0	P ZF96/ACR10
daphnid ChV	<= 10.0	P SAR
daphnid ChV	= 0.800	P D48/ACR10
algal ChV	<= 16.0	P
algal ChV-biom	>= 30.0	M S,M
P. putida 16-h EC10	=> 7600.0	M S,N
ss bacteria ChV	=> 700.0	M S,N

Predictions are based on SARs for

using the

structure and excess toxicity due to the slow
from the radical to the SAR chemical class
oxygen radical-bis; $\log K_{ow}$ for the
= 0.26 (ClogP); MW481; pH7; effective concentrations
based on 100% active ingredients and mean measured concentrations
hardness <180.0 mg/L as CaCO₃; and TOC <2.0 mg/L;

moderate concern;

assessment factor = 10.0
CC parent material = 0.080

CC product = 1.0

*CEB ECOTOX: All releases to surface waters;

XB: Testing desired.

SAT Co-chairperson: Vince Nabholz, 260-1271

BIOLOGICAL TEST INFORMATION

Case Number:	P-99-0510	Date Received:	2/22/99	Rev. Init:	JLW	OECD Status:	complete	Page:	1 of 76
Genotoxicity data for:	<input checked="" type="checkbox"/> Submitted Substance	<input type="checkbox"/> Analog:							
<input checked="" type="checkbox"/> Ames	<input type="checkbox"/> POS/NEG	(with/without activation)	STRAIN IF ()						
<input checked="" type="checkbox"/> E. coli reverse mutation	<input type="checkbox"/> POS/NEG	(with/without activation)	<input type="checkbox"/> Mouse Micronucleus	<input type="checkbox"/> POS/NEG	ip/oral				
<input checked="" type="checkbox"/> Chromosome Abs in:	CHO/CHL	<input type="checkbox"/> POS/NEG	(with/without activation)	<input type="checkbox"/> Rat Hepatocyte UDS	<input type="checkbox"/> POS/NEG				
Comments:	Chromosome aberration assay used Chinese Hamster V79 cells.								
Other Data:	<input checked="" type="checkbox"/> Ecotox	<input checked="" type="checkbox"/> Fate Biodegradation, pg. 929; Activated Sludge, pg. 1010; Inhibitory effect on cell multiplication of the bacterium, pg. 960.	<input checked="" type="checkbox"/> Water solubility/Log P > 40 g/L at 20 C; pg. 13						%aai
This information is for: <input checked="" type="checkbox"/> Submitted Substance <input type="checkbox"/> Analog:									
Study Type:	Acute Oral	Study duration:	16 days	Species:	Rat	Sex:	MF		
Wt/Life stage:	150-300 g/young adult	No. groups/No. per group	1/6	Controls:					
Route:	Oral	Dose range:	2000 mg/kg						
Characteristics of tested substance:	orange powder								
Test Conditions (Dosing Regimen):	Single oral gavage applied as a suspension in aqua bidest								
Results:	No mortality occurred. The expected body weight gain was observed. Signs of toxicity noted in the female animals comprised impaired or poor general state, dyspnea, apathy, staggering and tremor. These symptoms are to be considered unspecific toxicity symptoms. The female animals appeared normal one day after application. The males did not show any symptoms. No abnormalities were noted at necropsy. The LD50 was determined to be > 2000 mg/kg for males and females.								

BIOLOGICAL TEST INFORMATION					
Case Number: P-99-0510	Date Received: 2/22/99	Rev. Init: JLW	OECD Status: complete	Page: 2 of 7	
This information is for: <input checked="" type="checkbox"/> Submitted Substance	<input type="checkbox"/> Analog:				
Study Type: Acute Eye Irritation	Study duration:	72 hours	Species: Rabbit	Sex: MF	
Wt/life stage: NS/young adult	No. groups/No. per group	1/3	Controls:		
Route: Conjunctival sac	Dose range:	24 mg			
Characteristics of tested substance:	orange powder				
Test Conditions (Dosing Regimen):	Single ocular application of test substance at a 0.1 ml volume to conjunctival sac; administered as received; substance was washed out 24 hours after application.				
Results:	No mortality occurred. The average score (24 to 72 hours) for irritation was calculated to be 0.0 for corneal opacity and iris, 0.8 for conjunctival redness and 0.1 for chemosis. The findings were reversible in all animals within 72 hours after application. The test substance does not give indications of an irritant property to the eye.				

BIOLOGICAL TEST INFORMATION					
Case Number: P-99-0510	Date Received: 2/22/99	Rev. Init: JLW	OECD Status: complete	Page: 3 of 7b	
This information is for: <input checked="" type="checkbox"/> Submitted Substance	<input type="checkbox"/> Analog:				
Study Type: Acute Dermal Irritation	Study duration: 72 hours	Species: Rabbit	Sex: MF		
Wt/Life stage: young adult	No. groups/No. per group 1/3	Controls:			
Route: Dermal	Dose range: 0.5 g				
Characteristics of tested substance: orange powder					
Test Conditions (Dosing Regimen): Single, 4 hour, semi-occlusive, topical application to the intact skin.					
Results: No mortality occurred. The average score (24 to 72 hours) for irritation was calculated to be 0.2 for erythema and 0.0 for edema. The skin findings were reversible in all animals within 48 hours after removal of the patches. Under the test conditions, the test material does not give indication of an irritant property to the skin.					

BIOLOGICAL TEST INFORMATION					
Case Number: P-99-0510	Date Received: 2/22/99	Rev. Init: JLW	OECD Status: complete	Page: 4 of 74	
This information is for: <input checked="" type="checkbox"/> Submitted Substance	<input type="checkbox"/> Analog:				
Study Type: Acute Dermal Irritation	Study duration: 15 days	Species: Rat	Sex: MF		
Wt/Life stage: 200-300 g/young adults	No. groups/No. per group 1/10	Controls:			
Route: Dermal	Dose range: 2000 mg/kg				
Characteristics of tested substance: orange powder					
Test Conditions (Dosing Regimen): Single, 24 hour, semi-occlusive application; applied as a suspension in 0.5% Tylose CB 30.000 in aqua bidest to clipped epidermis					
Results:	<p>No mortality occurred. No systemic signs of toxicity were observed. The index for erythema could not be read due to staining from the test substance. The expected body weight gain was observed with the exception of 1 male and 2 female rats which showed weight reduction in the first week of observation. No abnormalities were noted at necropsy. The LD50 was found to be > 2000 mg/kg for males and females.</p>				

BIOLOGICAL TEST INFORMATION

Case Number: P-99-0510	Date Received: 2/22/99	Rev. Init: JLW	OECD Status: complete	Page: 5 of 76
This information is for: <input checked="" type="checkbox"/> Submitted Substance <input type="checkbox"/> Analog:				
Study Type: Skin Sensitization	Study duration: 23 days	Species: Guinea pig	Sex: F	
Wt/Life stage: 315-357 g/young adult	No. groups/No. per group 1/10	Controls: 2/5		
Route: intradermal and dermal	Dose range: Intradermal: 50% ; Dermal: 2% ; Challenge: 0.05%			
Characteristics of tested substance: orange powder				
Test Conditions (Dosing Regimen): Magnusson and Kligman				
Results:	<p>The intradermal induction caused moderate and confluent erythema and swelling in all test group animals. After the percutaneous induction, partially incrustation could be observed in addition to moderate and confluent erythema and swelling in all test group animals. After the challenge, none of the animals showed skin findings. Testers concluded that the test substance does not have a sensitizing effect under the test conditions.</p> <p style="text-align: right;">8</p>			

BIOLOGICAL TEST INFORMATION

Case Number:	P-99-0510	Date Received:	2/22/99	Rev. Init:	JLW	OECD Status:	complete	Page:	6 of 7
This information is for:	[X] Submitted Substance	[] Analog:							
Study Type:	28 day Repeated Dose	Study duration:	6 weeks	Species:	Rat			Sex:	MF
Wt/Life stage:	148-245 g/49 days	No. groups/No. per group	1/10, 2/5	Controls:	1/10				
Route:	Oral	Dose range:	0, 25, 200, and 1000 mg/kg						
Characteristics of tested substance:	orange powder								
Test Conditions (Dosing Regimen):	Daily oral gavage for four weeks of test article in 0.5% aqueous carboxyl methyl cellulose solution administered at a volume of 10 ml/kg followed by a 2 week recovery period.								
Results:	For 1000 mg/kg group the following was observed: anogenital region smeared with urine, piloerection, salivation, discoloration of feces, ataxia/hypothermia (one female only) and tremor/abdomen extended (one female), impairment of motor activities in males, increased water consumption in both sexes, impairment of body weight in males, increases in WBC, polymorphonuclear neutrophils, anisochromia, platelets, γ -glutamyl-transferase, inorganic phosphate, calcium, total protein, globulins, urinary blood and tyrosine-like urinary crystals in both sexes, decreases in mean corpuscular volume, prothrombin time, chloride and triglycerides in both sexes, decreases in glucose in the males and RBCs, hemoglobin, hematocrit, mean corpuscular hemoglobin, mean corpuscular hemoglobin concentration and urinary specific gravity in females, increased liver weights, increased adrenal weights, hepatocellular hypertrophy in liver, increased number of multinucleated hepatocytes in liver of males, degenerative fatty infiltration in liver, lipid accumulation in adrenal cortex, diffuse follicular hypertrophy and hyperplasia in thyroid glands, increased hematopoiesis in spleen. For 200 mg/kg group: salivation in 2 females, slightly increased water consumption in females, increases in platelets and globulins, increases in total protein in the males and in γ -glutamyltransferase in the females, decrease in prothrombin time in males, increased liver weights in females, degenerative fatty infiltration in the liver of some females, lipid accumulation in the adrenal cortex, increased hematopoiesis in spleen of one female. In 25 mg/kg group: no treatment related changes. The NOAEL was 25 mg/kg.	9							

NCSAB SAT REPORT		CBI? (Y/N):
PMN:	P-99-0510	CAS RN:
Chemical Name:		Analogs:
		Production Volut

Structure:

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Use:

Polymerization inhibitor for distillation of styrene.

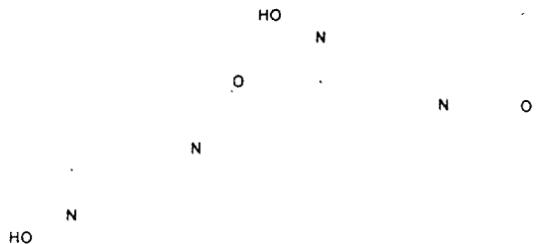
STN file CA: 8 references found; 129:41523, 129:82074, 128:230819, 128:61912, 128:61909, 128:61899, 127:248896, 125:275667.

Formula:	Eq Wt:
Mol Weight:	480.70
Wt%<500:	Wt%<1000
MP: 150.40	BP: >500 VP: 7.5E-9

H₂O Sol (g/L): Physical State: Solid (orange powder) Log P: 0.26 (calcd)

Endpoint (mg/L)	Est. Value	Meas. Value	Comments
Fish 96-h	> 1000	190	
Daphnid 48-h	102	8.2	
Algal 96-h	105	> 30	
Fish ChV	> 100	20	
Daphnid ChV	10	0.50	
Algal ChV	16	> 30	
BCF			

CHEMICAL CLASS:		SAR:
ECOTOX CONCERN	H (M) LT	CONCERN CONCENTRATION 1.0
DATE 3/5/94	ASSESSOR:	



SMILES

CHEM :

CAS Num:

ChemID1:

ChemID2:

ChemID3:

MOL WT : 482.71

Log Kow: 0.26 (User entered)

Melt Pt: 150.00 deg C

Wat Sol: 2.818E+004 mg/L (calculated)

ECOSAR Class(es) Found

ECOSAR Class	Organism	Duration	End Pt	Predicted mg/L (ppm)
Neutral Organic SAR (Baseline Toxicity)	: Fish	14-day	LC50	21243.645
	: Fish	96-hr	LC50	1726.987
	: Daphnid	48-hr	LC50	101.824
	: Green Algae	96-hr	EC50	105.402
	: Green Algae	96-hr	ChV	15.771

//

CHEMICAL: Unknown

11:25:57 03/04/99

MOL WT : 482.72

MOL FOR

SMILES

ISOC-ID:

FRAG-ID: 11 2 2 4 4 5 5 5 4 4

H-COUNT: 1 3 3 2 1 2 3 3 1 2 2 2 2 2 1 1 2 3 3 1 3 3 2

Class	Type	Contribution Description	Comment	Value
FRAGMENT	# 1		A PRIORI	-3.000
FRAGMENT	# 2		MEASURED	-2.670
FRAGMENT	# 3		MEASURED	-2.670
FRAGMENT	# 4		A PRIORI	-3.000
ISOLATING	CARBON			4.680
EXFRAGMENT	BRANCH		(Chain)	-1.040
EXFRAGMENT	BRANCH		(Group)	-0.440
EXFRAGMENT	HYDROG			10.442
EXFRAGMENT	BONDS		(COMBINED)	-2.040
SCREEN	NOTE			0.000
RESULT	v3.3	Possibly low due to hydrophilic overla	ESTIMATE	0.262

Press ENTER to continue...

MAR 5 1999
DATE _____

ATTENDEES

SIGNATURE

CHEMISTRY

- Paul Bickart
 Diana Darling
 Rich Engler
 Greg Fritz
 Fred Metz
 Daniel Lin
 Kathy Schecter

D. Darling
Rich Engler

Kathy Schecter

ENVIRONMENTAL FATE

- Bob Boethling
 David Lynch
 Gary Thom

Gary

HEALTH

- Katherine Anitole
 Michael Cimino
 Leonard Keifer
 David Lai
 Jim Murphy
 Deborah Norris
 Ronald Ward
 Yin Tak Woo

Katherine Anitole
Michael Cimino
Leonard Keifer
David Lai
Jim Murphy
Deborah Norris
Ronald Ward
Yin Tak Woo

ENVIRONMENTAL EFFECTS

- Gordon Cash
 Vince Nabholz
 Maggie Wilson

Gordon Cash

SAT CHAIRPERSON/OTHER

- Rebecca Jones
 Leonard Keifer
 Vince Nabholz

 Robert Morcock

Robert Morcock

